



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/568,087

02/13/2006

Takashi Yamada

Q93188

7478

23373 7590 01/12/2009
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

KAO, CHIH CHENG G

ART UNIT

PAPER NUMBER

2882

MAIL DATE

DELIVERY MODE

01/12/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/568,087	Applicant(s) YAMADA ET AL.	
	Examiner Chih-Cheng Glen Kao	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the limitation "the second X-rays" in line 3. The antecedent basis for this limitation in the claim is not clear. Although, claim 1, from which claim 5 depends, recites X-rays in line 3 and fluorescence X-rays in line 4, it is not clear if "the second X-rays" as recited in claim 5 refer to the X-rays, the fluorescence X-rays, or another group of second X-rays. Since this is not clear, claim 5 has been rejected for being indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yun et al. (US 2003/0223536, hereinafter referred to as Yun) in view of Hossain et al. (US 5754620, hereinafter referred to as Hossain).

Art Unit: 2882

3. Regarding claim 1, Yun discloses a system which comprises: an X-ray source (fig. 1, #112), and a secondary target (fig. 1, at #10 and 12) adapted to be irradiated with X-rays (fig. 1, #110) emitted from the X-ray source, wherein fluorescence X-rays (fig. 1, #116) selected from the group consisting of Be-K α line, Si-L line and Al-L line (paragraph 87) are emitted from the secondary target.

However, Yun fails to disclose an X-ray tube having a primary target.

Hossain teaches an X-ray tube (fig. 1a) having a primary target (fig. 1a, #80).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the system of Yun with the x-ray tube of Hossain, because of the following rationale. Since the Examiner finds that the prior art (i.e., Yun) contained a “base” system upon which the claimed invention can be seen as an “improvement”, and since the Examiner finds that the prior art (i.e., Hossain) contained a “comparable” system that has been improved in the same way as the claimed invention, the Examiner thus finds that one of ordinary skill in the art could have applied the known “improvement” technique (of Hossain) in the same way to the “base” system (of Yun) and the results would have been predictable to one of ordinary skill in the art. Therefore, such a claimed combination would have been obvious.

Also note that recitations (i.e., "so as to impinge upon a diffraction grating, an artificial multilayer mirror or a filter, which is an object to be evaluated") with respect to the manner in which a claimed apparatus is intended to be employed do not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. See MPEP 2114.

Art Unit: 2882

4. Regarding claim 2, Yun further discloses wherein the X-rays emitted from the X-ray source (fig. 1, #112) necessarily excite electrons of a Si-K shell, which in turn generate Si-L line by cascade excitation (paragraph 87).

5. Regarding claim 4, Yun further discloses a poly-capillary (fig. 1, #114; and paragraph 40) which concentrates the first X-rays emitted from the X-ray source (fig. 1, #112) before the secondary target (fig. 1, at #10 and 12) is irradiated by the first X-rays (fig. 1, from #112).

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yun and Hossain as applied to claim 1 above, and further in view of Yamagami et al. (US 2003/0043963, hereinafter referred to as Yamagami).

Yun as modified above suggests a system as recited above.

However, Yun fails to disclose wherein a surface of the secondary target comprises an oxide film and wherein the oxide film is removed prior to irradiation of the secondary target.

Yamagami teaches wherein a surface of a secondary target comprises an oxide film and wherein the oxide film is removed (paragraph 37, sentence 4) necessarily prior to irradiation of the secondary target (when the target is to be used again for irradiation).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the system of Yun as modified above with the removing of Yamagami, since one would have been motivated to make such a modification for better control during pre-treatment (paragraph 5) as implied from Yamagami.

Art Unit: 2882

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yun and Hossain as applied to claim 1 above, and further in view of Sudo (JP 03-209156).

Yun as modified above suggests a system as recited above.

However, Yun fails to disclose at least one of an artificial multilayer mirror and a total reflection mirror, and wherein the second X-rays emitted by the target are monochromated into single fluorescence X-rays by the at least one of the artificial multilayer mirror and the total reflection mirror.

Sudo teaches at least one of an artificial multilayer mirror and a total reflection mirror (fig. 1, #7), and wherein second X-rays (fig. 1, #8) emitted by a target (fig. 1, #3) are monochromated into single fluorescence X-rays by the at least one of the artificial multilayer mirror and the total reflection mirror (abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further modify the system of Yun as modified above with the mirror of Sudo, since one would have been motivated to make such a modification for improving reflection intensity (abstract) as shown by Sudo.

Response to Arguments

8. Applicant's arguments with respect to claims 3 and 5 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments filed November 13, 2008, have been fully considered but they are not persuasive.

Regarding at least claim 1, Applicant argues that the combination of Yun and Hossain fails to disclose a primary target, secondary target, and object. Regardless of whether this is true

Art Unit: 2882

or not, the "object" is not part of a claim recitation (i.e., "so as to impinge upon a diffraction grating, an artificial multilayer mirror or a filter, which is an object to be evaluated") that has patentable weight. The manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. See MPEP 2114. In this case, the basic structural limitations of the EUV light source include the primary target and secondary target, but not the object to be evaluated. Since the combination of Yun and Hossain does suggest the primary and secondary targets, at least claim 1 is rejected as being unpatentable.

In conclusion, Applicant's arguments are not persuasive, and the claims remain rejected.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2882

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571)272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chih-Cheng Glen Kao/
Primary Examiner, Art Unit 2882